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CEREAL DISEASES

BACTERIAL WILT OF CORN

It is already apparent that bacterial wilt (Aplanobacter stewartii) is again very severe. Indeed there is some indication that the losses from this disease in 1933 may exceed those of either 1931 or 1932. It is, of course, too early for a satisfactory appraisal of losses. We are including below extracts from reports already received, and plan similar "progress reports" from time to time. With the aid of subsequent reports from collaborators and others we hope to compile this fall or winter a summary of the effects of the disease.

The severity of the disease during the present season is indicated by relatively high percentage of infection under certain conditions even in strains and hybrids which in previous years have proved to be much more resistant than open pollinated varieties.

MASSACHUSETTS: While making a vegetable disease survey in Hampden County today, I observed wilt in practically every field of sweet corn examined, varying from 1 per cent to 85 per cent primary infection; and this is early for the best inspection and diagnosis. The disease was worse where home-grown seed was saved and planted. However, in no field in that section last year did I observe more than 1 or 2 per cent primary infection. Fields from purchased seed (seedmen) showed from traces to 50 per cent primary infection. Oldest corn is just reaching occasional tassel. No other section of the State has been surveyed. (O. C. Boyd, June 20).

CONNECTICUT: Wilt of sweet corn was first observed in Connecticut, May 18. By June 10, it was easily observed on the earliest planted sweet corn then from 12 to 18 inches tall. It acted much the same as last year and apparently on the earliest corn the amount of infection is about the same, showing (June 10) 10 to 25 per cent injury. By the end of June some of these fields showed as high as 45 to 65 per cent infection. (G. P. Clinton).

NEW YORK: Although bacterial wilt of corn was serious in 1932 it seems to be even more so in 1933 and not only is it more serious in the southern part of the State but it is spreading to the sections farther north where it did not occur last summer. I might add that in a large number of demonstrations which we have testing the F_1 generation of the supposedly resistant seed, the seedlings at least seem to be fully as susceptible as are the ordinary strains. (Charles Chupp, June 29).

PENNSYLVANIA: Bacterial wilt is very general this year. I observed it first on June 8, at Bedford, Bedford County. Since the eighth of June it has been found or reported from nearly every part of the State. Infections are often running as high as 40 to 70 per cent of the plants. I believe that the infections are as general and widespread as in 1932 but it is too early to make loss estimates. (R. S. Kirby, July 1).

OHIO: In a number of fields of Golden Bantam sweet corn near Toledo 60 to 70 per cent infection with bacterial wilt was observed. A few fields planted for the early trade have already been plowed up because of the severity of this disease. (N. E. Stevens).

MICHIGAN: Found as far north as Charlevoix on June 6. Very severe this year. Until 1932 this disease was not of commercial importance in Michigan. (J. H. Muncie).

INDIANA: More in almost all varieties of early sweet corn than on the same date last year. (Glenn M. Smith, June 19).

ILLINOIS: Stewart's bacterial wilt very severe. Infections in different varieties of yellow sweet corn, ranged on June 15 from 26 to 78 per cent. (L. A. Somers).

ARKANSAS: Bacterial wilt of corn found causing some damage to early yellow sweet corn in a home garden at Fayetteville, Arkansas, on June 6. Affected plants were stunted, some almost completely killed with all the leaf blades characteristically withered and straw colored. Uncomplicated by any soft rot of stalks. Pathogen is being isolated. As far as known this is the third time in 15 years that the disease has been noted in Arkansas, having been previously found in 1920 (Dr. J. A. Elliott) and in 1931 (Rosen). (H. R. Rosen, June 15).

WHEAT DISEASES IN PENNSYLVANIA

R. S. Kirby sends the following report on winter wheat diseases in Pennsylvania. (June 29).

Stem rust (Puccinia graminis) was apparently not a factor in reducing the yield of wheat in 1933. It was first found on June 29 in Northampton County. It was only observed in 2 out of 72 fields.

Leaf rust (P. triticina). A severe outbreak of leaf rust occurred in 1933. It was found in every field surveyed. The average infection was 81.8 per cent.

Septoria infection (Septoria nodorum) was general and severe this year. It was found in all wheat fields surveyed and 24.9 per cent of the spikelets were infected.

Scab (Gibberella saubinetii). An average of 1.05 per cent of the spikelets in 72 fields were infected with this disease, and 91.2 per cent of the fields surveyed showed some infection. The maximum percentage of infection was 20 per cent.

Loose smut (Ustilago tritici). A survey of 72 fields in 12 counties shows an average of 3.8 per cent loose smut.

Stinking smut (Tilletia spp.). A survey of 72 fields in 12 counties indicates that there will be considerably less stinking smut than for several years. The average percentage in untreated fields was 0.76, the maximum 9.5. In treated fields there was not more than a trace. Where seed came from fields treated last year the average was 0.25 per cent and the maximum 0.5. Almost half or 49.3 per cent of the untreated fields had some infection.

SMALL GRAIN DISEASE LOSSES IN NORTH CAROLINA, 1933

C. K. Middleton, of the Seed Crop Certification Service in North Carolina, contributes the following report:

OATS: Twenty fields of oats, selected at random along the highways in eastern North Carolina in 1933, and inspected for smut (Ustilago spp.) showed an average infection of 9.2 per cent. The range in percentage infection varied from 0 to 33 per cent. The distribution as to percentage infection within this range was quite uniform, there being five fields in each of the following groups: (1) 0 to trace, (2) 1 to 5 per cent, (3) 6 to 10 per cent, and (4) 11 to 33 per cent.

In comparison with this group should be mentioned another group of 25 fields that were inspected for certification. Of this group, 17 fields were found to be free of smut, seven to contain a trace of smutted plants and one to have a 3 per cent infection. Two of these fields were from volunteer stands, which seldom if ever produce any smutted plants. Of the other 23 fields all but three were treated for smut with good results, as only four showed even a slight trace of diseased plants. Of the three fields grown from non-treated seed two showed a trace of smut and one contained approximately 3 per cent diseased plants.

The economic importance of using seed oats from disease-free fields, or seed which has been carefully treated, is clearly seen from this comparison. A large part of the oats grown in North Carolina, and especially in the Coastal Plain Area, is grown for forage and the acreage devoted to the crop is usually small. Since it is a minor crop on many farms, farmers have not taken the trouble to treat the seed, and usually do not have the simple equipment that is necessary for doing so. An average loss of nearly 10 per cent, however, makes it important that each farmer in buying seed insist on smut-free or treated seed, or prepare to treat it himself.

Crown rust (Puccinia coronata) of oats was a serious factor in Hyde County in 1933. Yields for the county were probably cut over 33 per cent by this one disease, while on some farms the loss was more than twice this amount. In one field observed 90 per cent of the stalks were broken over. Normally this field would not have been cut before June 1, and should have produced 50 to 60 bushels per acre. The field was observed on May 17, and on the following day those parts which were not too badly damaged were harvested.

This was the first really serious rust attack that has occurred in this county in ten years, according to resident farmers.

WHEAT: Of 61 fields of wheat inspected loose smut was found in 41 and bunt in eight. The average percentage infection of loose smut was less than 0.5 for all fields, but in ten of these fields the infection was over 2 per cent. The highest infection found was 4 per cent. Where bunt was present, the infection varied from a trace to 4 per cent.

BARLEY: Loose smut (Ustilago nuda) and stripe disease (Helminthosporium gramineum) of barley annually cause a serious loss. Infections with stripe disease were found to be as high as 30 per cent in one field and 47 per cent in another this season. Smut losses also occasionally ran as high as this and often as much as 10 to 20 per cent.

Pathologists have worked out control methods for each of these diseases, with the exception of rust, and seed treatment should be more generally practiced. To help stop this loss, the Agricultural Agents in some counties have made arrangements for centralized seed treating stations. The results that are being secured should encourage other groups to cooperate in the same way.

F R U I T D I S E A S E S

REPORTS ON APPLE SCAB (VENTURIA INAEQUALIS)

MASSACHUSETTS: Apparently, little or no infection occurred during the rainy period of April 25 to 26, while such varieties as McIntosh and Baldwin were in delayed-dormant buds, even though a slight discharge of ascospores took place. Heavy infection did occur, however, generally during the rain of May 3, with such varieties in pre-pink, that is where the pre-pink spray was not applied before or just following the rain. A very heavy discharge of spores occurred during that rain. The first appearance of new scab from that infection period was on May 21, at the end of the blossom period. A second infection period occurred with the rain of May 20, before many growers started the calyx spray. Marked infection is expected to show up around June 5 to 8. (O. C. Boyd, May 29).

NEW YORK: According to reports in recent issues of the Weekly News Letter of the State College of Agriculture, scab occurs in practically all

orchards but in general has been satisfactorily controlled where spraying has been timely and thorough. Several counties, particularly in the Hudson Valley and on Long Island, report that it has not been a problem this year. However, in some counties control has been difficult. In Niagara County, J. G. Goodrich reports that "Scab in general will cut into the crop very heavily, but a large number of the better orchards are practically clean." E. R. Wagner states that in Orleans County (June 12), "Many orchards are beginning to be defoliated as the result of scab. Practically the entire set of fruit in some orchards has dropped because of scab infection on the stems of the young fruit. There is scab to some extent in nearly all orchards but where the early sprays were missed nearly all of the foliage was completely covered with scab." Later (June 26) he said that scab was serious in most orchards and would require very thorough spraying through the balance of the season.

BLIGHT (BACILLUS AMYLOVORUS) ON APPLES

According to reports in the State College of Agriculture Weekly News Letter, blight is of considerable importance in New York this season on apples. Pears seem to be less affected. It is said to be severe in some orchards in several counties. In Orange County, Ray Bender suggests the possibility that the rosy aphis may have played a part in spreading the disease. Another insect believed by some growers in Ulster County to be a carrier is the oriental peach moth, according to W. J. Clark. In Wisconsin, R. E. Vaughan reports the first blight cankers exuding on May 16, which was also the beginning of the blooming period of the Fameuse variety. The first blossom blight was observed on May 22. Rains occurred every day from May 15 to 18, and hail also on the latter date. The incubation period of blight, as shown by inoculations, is from five to six days.

REPORTS ON APPLE RUST

CONNECTICUT: Apple rust (Gymnosporangium juniperi-virginianae) is becoming prominent due to wet weather in spring and abundance of cedar apples. Many complaints. O stage on leaves of apple now very abundant the last of June. (G. P. Clinton).

NEW YORK: Orange County. Saw one orchard that has cedar rust worse than I have ever seen before. Rome Beauty trees are the worst infected and the loss of leaf surface will undoubtedly seriously weaken the trees. Wealthies are also badly yellowed. Jonathan, Northwestern Greening, Newtown and Starks are infected to a less degree. There are fruit lesions though not many on all varieties. (Ray Bender in Weekly News Letter, July 3).

Dutchess County. Apple rust seems to be only a problem on Rome Beauty and is mostly leaf infection. (J. A. Evans in Weekly News Letter, July 3).

TENNESSEE: Rust (Gymnosporangium sp.) was found on Stark's Delicious and Golden Delicious foliage in Knox County, June 14 to 17. (P. R. Miller).

BROWN ROT BLOSSOM BLIGHT OF PEACH

Blossom blight caused by Sclerotinia fructicola was responsible for severe losses in some peach orchards in Massachusetts, Connecticut, and New York, according to the following reports:

MASSACHUSETTS: I have not observed many commercial orchards, but there are many reports from county agents and others, accompanied by specimens, of this disease. I first observed the disease May 22, in the college orchard, where trees of early varieties showed from 10 to 20 per cent blossom blight with accompanying twig canker. Many twigs were killed back from two to six inches. County Agent, J. W. Dayton, Plymouth County, reported an average fruit set loss of 50 per cent in one orchard, with from 90 to 100 per cent loss in some trees. In the college orchard, the pink spray was timed for the late varieties, the early ones being almost in early blossom; and followed the heavy rain of May 3. Apparently, no one hereabouts has ever observed before such pronounced damage from brown rot blossom blight. (O. C. Boyd, May 29).

CONNECTICUT: Blossom and twig blight unusually prominent. Early wet spring weather favored this trouble so that considerable amount of injury to blossom and fruit resulted. Probably a fair crop if no fruiting trouble occurs later. (Clinton and Stoddard).

NEW YORK: Brown rot blossom blight on peaches was very serious in Niagara County this year. Those who applied the pink spray obtained good control. The loss from blossom blight amounted to at least one-half of the crop in a few orchards. (J. G. Goodrich in Weekly News Letter, June 12).

OTHER REPORTS ON FRUIT DISEASES

STRAWBERRY DISEASES IN PENNSYLVANIA: G. L. Zundel reports that leaf spot (Mycosphaerella fragariae) is unusually abundant this year. In a number of cases it is so severe that the foliage is being killed. The Botrytis fruit rot (Botrytis cinerea) is also very prevalent. (July 6).

RASPBERRY MOSAIC IN NEW YORK: Dr. Rankin and Mr. Slate were in Ulster County on June 6, examining many of the raspberry plantings in the Marlboro and Milton area. According to Dr. Rankin, yellow mosaic was found as a slight infection in a Newburgh planting at Marlboro. He also found Chief raspberries infected with the red and yellow mosaic. One Latham patch is 100 per cent infected with red mosaic, yet in very fine vigor, whereas a Viking raspberry patch with less infection shows much dwarfing of the fruiting wood and leaves and a general poor condition. Both fields have been given the best of treatment. (W. J. Clark in Weekly News Letter, June 12).

V E G E T A B L E D I S E A S E S

DISEASES OF MUCK CROPS IN NEW YORK: The weather so far has been favorable for muck crop diseases. Rains during the onion sowing period decreased the effectiveness of the formaldehyde treatment so that many fields in Wayne

and Orange Counties have 50 per cent of the seedlings affected. This disease probably will reduce yields by 10 per cent. Lettuce mosaic (virus), yellows (virus), and drop (both Sclerotinia sclerotiorum and S. minor) are causing combined losses of 10 per cent and more in most fields of early lettuce in Orange County. Spinach mildew (Peronospora effusa) has been unusually severe in Nassau County, Long Island, on the spring crop. Celery blight (Cercospora apii) has been found on 100 per cent of some early transplanted green varieties on Staten Island. (A. G. Newhall, June 7).

BACTERIAL BLIGHT OF PEAS IN COLORADO: In a preliminary survey of peas in the vicinity of Longmont, Colorado (Boulder County) bacterial blight (Bacterium pisi) was found in many fields. A hail storm occurred about May 15, and in practically every case the infection appeared to be associated with the hail injury. With the high temperatures and low humidities which are prevailing at the present time, the infection may not spread. (W. J. Zaumeyer).

SCLEROTIUM STEM ROT OF POTATOES AND PEPPERS IN ARKANSAS: Specimens of stem and tuber rot of Irish potatoes received from County Agent, E. S. McCright located at Hampton, Arkansas, developed typical Sclerotium rolfsii mycelium and sclerotia. Same disease also found on diseased pepper plants gathered by Earl Kilpatrick at Ponchatoula, Louisiana. (H. R. Rosen, June 9).

ONION SMUT IN NEW YORK: Smut (Urocystis cepulae) is prevalent in many onion fields in Genesee and Orleans Counties, especially where onions have been planted year after year. One field, cleared only six years ago, contained 98 per cent of smut. That wind alone is not an important factor in increasing smut infection in fields unplanted to onions is indicated. Fields which had a trace of smut 9 years ago, but have remained uncropped to onions until the present year, show no increase in smut. These fields are near heavily infected areas and to the leeward side. Nearby fields, which had no smut in 1924 and in which onions have been grown more or less continuously, possess 100 per cent infection. Approximately half a dozen growers treated with formaldehyde for smut. Control in some instances was unsatisfactory, apparently due to re-infection by the wind. Counts of four treated fields were 47, 26, 59, and 2 per cent smut. (E. L. Felix in Weekly News Letter, June 19).

DISEASES OF SPECIAL CROPS

DOWNY MILDEW OF HOPS IN NEW YORK

Dr. F. M. Blodgett made a survey of the few hop yards now present in Otsego and Oneida Counties. Wherever the plants were large enough (one year old or more) downy mildew (Pseudoperonospora humuli) was found scatteringly on the lowest leaves. It apparently was worse in the yards where the growers had been careless in the removal of the small shoots or sprouts from the crown of the plant.

Up to the present time of the season there has been no damage done, excepting in one yard. If weather conditions become favorable for the fungus, its presence, however, might cause serious losses. No powdery mildew was observed. A few plants were found with symptoms resembling those of mosaic.

The Sunday edition (June 18) of the Syracuse Post Standard carried a news story that in Franklin County the former hop growers are going back into the business, and hope finally to have as extensive plantings as there were years ago. (Charles Chupp, June 27).

TOBACCO DOWNY MILDEW IN TENNESSEE

Since downy mildew (Peronospora hyoscyami) was first observed in Bradley and Lincoln Counties, May 5, it has been found in 20 additional counties, including Maury, Coffee, Warren, Rhea, McMinn, Monroe, Loudon, Roane, Blount, Sevier, Anderson, Campbell, Knox, Jefferson, Claiborne, Grainger, Greene, Hawkins, Washington, and Sullivan. It is impossible to estimate the damage, but as it occurred when the plants were almost large enough to set out it caused considerable delay in planting and in a few cases killed as high as 50 per cent of the plants in the beds. Twelve tobacco beds, on a twelve-acre wood spot, were observed near Church Hill. One was seriously infected, two were only slightly infected, while the others were free. Plants were killed out in narrow strips where they had been shaded by boards placed across the bed to support the canvas. (Paul R. Miller).

TOBACCO SEED BED DISEASES IN PENNSYLVANIA

Fourteen seed beds were surveyed in which 11 had from a trace to 60 per cent wild fire (Bacterium tabacum) with an average percentage of 10.8, and 6 out of the 14 beds had from a trace to 80 per cent infection of downy mildew (Peronospora hyoscyami), average 9.3 per cent. Downy mildew infection apparently is well scattered over the county but is most severe south and southeast of the city of Lancaster.

Wild fire was in general found to be absent or much less severe on beds which had been well sprayed with Bordeaux. (R. S. Kirby, June 2).

DISEASES OF TREES AND ORNAMENTALS

BACTERIAL BLIGHT OF LILAC

MASSACHUSETTS: Blight (Bacterium syringae) has been observed again this spring in scattered localities, and is causing more damage than it did in 1932. The extensive plantings in a park in Northampton show much heavier infection than last year. Leaf, blossom, and twig-blight phases of the disease are all common. Some varieties show little or no infection, even though adjacent plants of different sorts may be heavily infected. (O. C. Boyd, May 29).

ALABAMA: A specimen was collected by P. R. Miller at a nursery in Madison County, June 3. The identification was verified by Miss M. K. Bryan. This seems to be the first report for Alabama.

OTHER REPORTS ON DISEASES OF ORNAMENTALS AND TREES

LILAC CANKER IN TENNESSEE: An unidentified disease had killed practically all of the lilacs in a nursery in Knox County. Cankers occur on the stems about July, causing them to wilt and eventually turn black and die. Isolations from last year's canker gave no culture. As these lilacs were grafted on California privet it may be due to incompatibility between the scion and stock as has been reported by K. S. Chester. (Jour. Arnold Arb. 12: 79-146. 1931). (Paul R. Miller).

LILY: Botrytis blight of lilies (B. elliptica) is severe in several flower gardens in Genesee and Orleans Counties, New York, necessitating spraying with Bordeaux. In all cases observed, the disease began at one end of the bed. (E. L. Felix, in Weekly News Letter, June 19).

IRIS: Leaf spot (Didymellina iridis) was very prevalent and destructive in Arkansas this year, particularly in May. Probably associated with excessive rainfall. (H. R. Rosen, June 9).

DELPHINIUM: Stem rot (Sclerotium delphinii) is destructive on cultivated delphinium in Arkansas. Two years ago the application of Semesan D55304 to the soil around affected plants, at the rate of 2 oz. to 3 gals. of water, using approximately 6 quarts to the square yard, seemingly prevented the death of these plants but also stunted them considerably. Nearby untreated plants died. Test requires duplication before it can be recommended. (H. R. Rosen, June 9).

WEIGELA: Leaf spot (Ramularia diervillae Pk.). Specimens of the Henderson variety collected at a nursery in Warren County, Tennessee, May 31, were determined by E. K. Cash. This variety was said to have 75 per cent leaf infection. (Paul R. Miller).

WILLOW: Scab (Fusicladium saliciperdum) was first observed in Massachusetts, on May 17. Damage was more severe on some infected trees than previously. (W. H. Davis, May 31).

DISEASES CAUSED BY NEMATODES

AN OUTDOORS INFESTATION OF ROOT-KNOT NEMATODE IN BRITISH COLUMBIA

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A severe infestation of lettuce by the root-knot nematode Heterodera radicicola (H. marioni) was discovered in May, 1933, in a market garden at Marigold, Vancouver Island. The lettuce plants were considerably weakened

by the parasite in several areas scattered throughout a plot of approximately one-half acre. So far as can be ascertained the possibility of current season infestation from any greenhouse source appears remote. The plot has been cropped with lettuce for several years and a progressively poorer crop noted by the owner for the past three or four years. The soil is a light sandy loam overlying bedrock in a warm sheltered location. So far as can be discovered this is the first recorded observation of root-knot as a parasite on outdoor crops in British Columbia.

We are indebted to Dr. G. Steiner for positive identification of the nematode.

WHEAT NEMATODE IN NORTH CAROLINA

Wheat heads sent by O. H. Phillips from Albemarle, Stanly County, June 16, were found by R. W. Leukel to be badly diseased with the wheat nematode, Tylenchus tritici.

BOTRYTIS SP. ON GOLDENSEAL

Near Bryson City, the center of the culture of Goldenseal in North Carolina, the leaf spot stage of the disease caused by Botrytis sp. was just becoming serious on May 29. Dead areas an inch or more in diameter were common on the leaves in most plantings. On these spots the fungus was fruiting abundantly. Growers stated that this is about the usual time for the disease to appear. Specimens were sent to H. H. Whetzel, who writes under date of July 5, 1933, "The Botrytis on Hydrastis canadensis is the one very common on that plant, especially in cultivation. It is an undescribed species." (N. E. Stevens).